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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,377	01/15/2002	Chienchung Chang	PA020089	6172
23696	7590	08/24/2005	EXAMINER	
Qualcomm Incorporated Patents Department 5775 Morehouse Drive San Diego, CA 92121-1714			SWERDLOW, DANIEL	
			ART UNIT	PAPER NUMBER
			2646	

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/050,377	CHANG ET AL.	
	Examiner	Art Unit	
	Daniel Swerdlow	2646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 18 June 2005.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-20 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 18 June 2005 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Drawings

1. The drawings were received on 18 June 2005. These drawings are not acceptable. The replacement sheet should be marked as such. See below.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

Replacement Drawing Sheets

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

Annotated Drawing Sheets

A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the

“Notice of Allowability.” Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

Response to Amendment

2. The amendment to the claims filed on 18 June 2005 does not comply with the requirements of 37 CFR 1.121(c) because deleted text is not indicated by strike-through. Amendments to the claims filed on or after July 30, 2003 must comply with 37 CFR 1.121(c). which states:

(c) *Claims.* Amendments to a claim must be made by rewriting the entire claim with all changes (e.g., additions and deletions) as indicated in this subsection, except when the claim is being canceled. Each amendment document that includes a change to an existing claim, cancellation of an existing claim or addition of a new claim, must include a complete listing of all claims ever presented, including the text of all pending and withdrawn claims, in the application. The claim listing, including the text of the claims, in the amendment document will serve to replace all prior versions of the claims, in the application. In the claim listing, the status of every claim must be indicated after its claim number by using one of the following identifiers in a parenthetical expression: (Original), (Currently amended), (Canceled), (Withdrawn), (Previously presented), (New), and (Not entered).

(1) *Claim listing.* All of the claims presented in a claim listing shall be presented in ascending numerical order. Consecutive claims having the same status of “canceled” or “not entered” may be aggregated into one statement (e.g., Claims 1–5 (canceled)). The claim listing shall commence on a separate sheet of the amendment document and the sheet(s) that contain the text of any part of the claims shall not contain any other part of the amendment.

(2) *When claim text with markings is required.* All claims being currently amended in an amendment paper shall be presented in the claim listing, indicate a status of “currently amended,” and be submitted with markings to indicate the changes that have been made relative to the immediate prior version of the claims. The text of any added subject matter must be shown by underlining the added text. The text of any deleted matter must be shown by strike-through except that double brackets placed before and after the deleted characters may be used to show deletion of five or fewer consecutive characters. The text of any deleted subject matter must be shown by being placed within double brackets if strike-through cannot be easily perceived. Only claims having the status of “currently amended,” or “withdrawn” if also being amended, shall include markings. If a withdrawn claim is currently amended, its status in the claim listing may be identified as “withdrawn—currently amended.”

(3) *When claim text in clean version is required.* The text of all pending claims not being currently amended shall be presented in the claim listing in clean version, i.e., without any markings in the presentation of text. The presentation of a clean version of any claim having the status of “original,” “withdrawn” or “previously presented” will constitute an assertion that it

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has not been changed relative to the immediate prior version, except to omit markings that may have been present in the immediate prior version of the claims of the status of "withdrawn" or "previously presented." Any claim added by amendment must be indicated with the status of "new" and presented in clean version, *i.e.*, without any underlining.

(4) *When claim text shall not be presented; canceling a claim.*

(i) No claim text shall be presented for any claim in the claim listing with the status of "canceled" or "not entered."

(ii) Cancellation of a claim shall be effected by an instruction to cancel a particular claim number. Identifying the status of a claim in the claim listing as "canceled" will constitute an instruction to cancel the claim.

(5) *Reinstatement of previously canceled claim.* A claim which was previously canceled may be reinstated only by adding the claim as a "new" claim with a new claim number.

3. Since the reply filed on 18 June 2005 appears to be *bona fide*, examiner accepts the amendment as an adequate reply to the non-final Office action (MPEP 714.03(A)).

Claim Rejections - 35 USC § 112

4. Applicant's amendment filed 18 June 2005, if made properly as described above, would overcome the rejections made under 35 USC § 112 in the prior Office action.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 through 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Lu (US Patent 6,052,462).

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7. Regarding Claim 1, Lu discloses a double talk detection and echo control circuit (i.e., a system for echo cancellation) (Fig. 1) comprising: a detection filter and decision stage (Fig. 1, reference 48, 54; column 4, lines 24-33) that monitors the presence of a near-end speech signal in a microphone signal in a frequency range of about 3750 Hz to 4000 Hz (i.e., monitoring voice energy in a first frequency band) (column 4, lines 39-42); an AFIR (i.e., adaptive) filter (Fig. 1, reference 38; column 4, lines 8-23) that generates an estimated echo signal (i.e., produces an echo signal) determined by internal coefficient values (i.e., based on a set of coefficients) with adaptation performed when near end speech is absent from the microphone signal (i.e., holds coefficients constant in double talk condition); a microphone (i.e., means for inputting audible signals) (Fig. 1, reference 30; Fig. 3; column 4, lines 34-36) that produces signals in a range from 0 to 4000 Hz (i.e., in a second frequency wider than and overlapping the first frequency band) and the estimated echo signal cancels echo from the microphone signal (column 3, lines 60-65).

8. Regarding Claim 2, Lu further discloses a loudspeaker (Fig. 1, reference 24; column 3, lines 45-50) that audibly transmits (i.e., plays) a signal filtered by the removal filter to remove frequency components in a range from 3750 Hz to 4000 Hz or, in other words, retaining frequency components between 0 and 3750 Hz (column 3, lines 28-34) (i.e., in a third frequency band [0 to 3750 Hz] essentially equal to the difference between the first frequency band [3750 Hz to 4000 Hz] and the second frequency band [0 to 4000 Hz]).

9. Regarding Claim 3, Lu further discloses an adaptation control signal (i.e. a control signal for controlling the adaptive filter) (Fig. 1, reference 46; column 4, lines 56-61) that causes the filter to discontinue adaptation (i.e., hold coefficients constant) based on detection of near-end microphone signals (i.e., double talk condition) (column 4, lines 51-56).

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10. Regarding Claim 4, Lu further discloses an analog to digital converter (Fig. 1, reference 32; column 3, lines 55-59) that receives the microphone signal and converts it to a digital signal (i.e., producing voice data based on the audible signals picked up by the microphone in the second frequency band) and the detection filter and decision stage (i.e., double talk detector) (Fig. 1, reference 48, 54; column 4, lines 24-33) monitoring the presence of a near-end speech signal in a microphone signal (i.e., operating on the voice data to detect the double talk condition).

11. Regarding Claim 5, Lu further discloses a digital to analog converter (Fig. 1, reference 22; column 3, lines 46-50) that receives a filtered signal ($x(k)'$) and converts it to an analog signal (i.e., produces an audio signal) for a loudspeaker (Fig. 1, reference 24) for audible transmission (i.e., for playing the audio signal). Lu further discloses the filtered signal ($x(k)'$) has frequency components between 3750 Hz and 4000 Hz removed (i.e., is within the third frequency band) (column 3, lines 31-34). In addition, Lu discloses an analog to digital converter (Fig. 1, reference 14; column 3, lines 10-14) that is configured by the connection of its output to the removal filter (Fig. 1, reference 18) for producing the audio signal within the third frequency band for audible transmission by the loudspeaker as above. As such, while examiner has interpreted the claim as intending to recite a digital to analog converter as depicted in applicant's Fig. 5 as reference 499, Lu anticipates the claim as presented also.

12. Claims 6 through 10 are essentially similar to Claims 1 through 5, respectively, and are rejected on the same grounds.

13. Regarding Claim 11, in addition to the elements cited above apropos of Claim 1, Lu further discloses implementation using appropriately programmed digital signal processing integrated circuits (i.e., a microprocessor system) (column 5, lines 19-23).
14. Regarding Claims 12 through 15, the additional limitations are essentially similar to those of Claims 2 through 5, respectively. As such, the claims are anticipated by Lu for reasons stated above apropos of those claims.
15. Claims 16 through 20 are essentially similar to Claims 1 through 5, respectively, and are rejected on the same grounds.

Response to Arguments

16. Applicant's arguments filed 18 June 2005 have been fully considered but they are not persuasive.
17. In the 5th through 8th paragraphs on page 12 of the response filed on 18 June 2005, applicant alleges that "the Lu reference does not disclose an adaptive filter that holds a set of coefficients constant when a double talk detector detects a double talk condition, as recited in the claims". Examiner respectfully disagrees. As stated in the prior art rejections made in the prior Office action mailed on 13 December 2004 and repeated above, Lu discloses an AFIR (i.e., adaptive) filter (Fig. 1, reference 38; column 4, lines 8-23) that generates an estimated echo signal (i.e., produces an echo signal) determined by internal coefficient values (i.e., based on a set of coefficients) with adaptation performed when near end speech is absent from the microphone signal (i.e., holds coefficients constant in double talk condition). As such, Lu discloses an adaptive filter that holds a set of coefficients constant when a double talk detector

detects a double talk condition. Further support is found in Lu, column 4, lines 56-61: "In the present example as shown in FIG. 3, the presence of signal activity within the range of 3750 Hz to 4000 Hz [i.e., double talk] will cause the decision stage 54 to issue the adaptation control signal at terminal 46. The AFIR [i.e., adaptive finite impulse response] filter 38 will respond to the control signal by discontinuing to adapt [i.e., holding constant] the internal coefficient values." Additional support is found in Lu, column 2, lines 46-51: "The double talk detection system further comprises a control output terminal for signalling that Near-End speech has been detected. The control output terminal is connected to a control input of the echo canceler in order to suspend adaptation of the internal coefficients of the AFIR filter when a Near-End speech signal is detected."

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Swerdlow whose telephone number is 571-272-7531. The examiner can normally be reached on Monday through Friday between 7:30 AM and 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh H. Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Daniel Swerdlow
Examiner
Art Unit 2646

ds
17 August 2005